

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A device for the extracorporeal treatment of blood comprising:

at least one exchanger comprising a semi-permeable membrane dividing said exchanger into a first chamber and a second chamber, at least one first inlet for blood to be treated being in fluid communication with the first chamber of the exchanger, a first fluid outlet being in fluid communication with the first chamber of the exchanger and a second fluid outlet being in fluid communication with the second chamber of the exchanger;

an input line for blood to be treated connected to the first inlet of the exchanger;

a blood output line connected to the first outlet of the exchanger;

at least one treatment unit comprising a semi-permeable membrane dividing the treatment unit into a first chamber and a second chamber, the treatment unit having at least one first fluid inlet in fluid communication with the second chamber of the treatment unit and at least one first fluid outlet in fluid communication with the first chamber of the treatment unit;

the second outlet of the exchanger being in fluid communication with the first inlet of the treatment unit; and

the first outlet of the treatment unit being in fluid communication with the input line;

wherein:

the treatment unit includes a second fluid outlet in fluid communication with the second chamber of the treatment unit; and

the second outlet of the treatment unit is in fluid communication with a first waste liquid discharge line, the waste liquid discharge line having a first end and a second end, the first end of said waste liquid discharge line being connected with the second outlet of the treatment unit and the second end of said waste liquid discharge line not being connected with any other outlet or inlet of the same treatment unit.

2. (Previously Presented) A device according to claim 1, wherein a first duct is connected between the second outlet of the exchanger and the first inlet of the treatment unit.

3. (Previously Presented) A device according to claim 1, wherein a second duct is connected between the first outlet of the treatment unit and the first inlet of the exchanger.

4. (Previously Presented) A device according to claim 1, comprising a first waste liquid discharge line connecting the second outlet of the treatment unit to a first waste liquid container.

5. (Original) A device according to claim 1, wherein the molecular permeability of the membrane of the exchanger is greater than the molecular permeability of the membrane of the treatment unit, at least above a certain molecular weight.

6. (Original) A device according to claim 5, wherein the membrane of the exchanger is a high-flow membrane and the membrane of the treatment unit is a low-flow membrane.
7. (Previously Presented) A device according to claim 5, wherein a ratio of a cut-off value of the membrane of the exchanger to a cut-off value of the membrane of the treatment unit is less than or equal to 3.
8. (Previously Presented) A device according to claim 5, wherein a difference in a cut-off value between the membrane of the exchanger and the membrane of the treatment unit lies between 20 000 dalton and 30 000 dalton.
9. (Previously Presented) A device according to claim 5, wherein a cut-off value of the membrane of the exchanger is less than or equal to 40 000 dalton.
10. (Previously Presented) A device according to claim 5, wherein a cut-off value of the membrane of the treatment unit is less than or equal to 10 000 dalton.
11. (Previously Presented) A device according to claim 1, further comprising a post-dilution line having a first end connected to the output line and a second end connected to a first source of sterile liquid.
12. (Previously Presented) A device according to claim 1 or 11, further comprising a pre-dilution line having a first end connected to the input line and a second end connected to a second source of sterile liquid.
13. (Previously Presented) A device according to claim 12, wherein the pre-dilution line is connected directly to a duct connected between the first outlet of the treatment unit and the first inlet of the exchanger.

14. (Previously Presented) A device according to claim 12, wherein the pre-dilution line is connected directly to the input line.
15. (Previously Presented) A device according to claim 12 wherein, at least one source of sterile liquid is a bag of sterile liquid.
16. (Original) A device according to claim 1, wherein the exchanger is a plasma filter.
17. (Previously Presented) A device according to claim 16, wherein the plasma filter has a cut-off value between one million and five million dalton.
18. (Previously Presented) A device according to claim 16 or 17, wherein the treatment unit has a cut-off value less than or equal to 250 000 dalton.
19. (Previously Presented) A device according to claim 18 wherein, the treatment unit comprises a semi-permeable membrane having a cut-off value such that all albumin molecules pass through said membrane.
20. (Previously Presented) A device according to claim 2, further comprising a reactor active on the first duct.
21. (Previously Presented) A device according to claim 2, further comprising an adsorption device active on the first duct.
22. (Previously Presented) A device according to claim 2, further comprising a radiation device active on the first duct.
23. (Previously Presented) A device according to claim 1, further comprising first means for regulating liquid flow rate placed on the input line connected to the first inlet of the exchanger.

24. (Previously Presented) A device according to claim 1, further comprising a first duct connecting the second outlet of the exchanger and the first inlet of the treatment unit; and

first means for regulating liquid flow rate placed on the input line exactly between the first inlet of the exchanger and a connection point connecting the input line to the second duct.

25. (Previously Presented) A device according to claim 1, further comprising a first duct connecting the second outlet of the exchanger and the first inlet of the treatment unit;

a second duct connecting the first outlet of the treatment unit and the first inlet of the exchanger;

means for regulating liquid flow rate placed on the input line upstream of the connection point connecting the input line to the second duct; and

means for regulating liquid flow rate placed on the second duct.

26. (Previously Presented) A device according to claim 1, further comprising a first duct connecting the second outlet of the exchanger and the first inlet of the treatment unit; and

means for regulating liquid flow rate placed on the first duct connecting the second outlet of the exchanger to the first inlet of the treatment unit.

27. (Previously Presented) A device according to claim 1, further comprising a post-dilution line having a first end connected to the output line and a second end connected to a first source of sterile liquid; and

means for regulating liquid flow rate placed on the post-dilution line.

28. (Previously Presented) A device according to claim 1, further comprising means for regulating a liquid flow rate placed on the waste liquid discharge line and connecting the second outlet of the treatment unit to a drain.

29. (Previously Presented) A device according to claim 12, further comprising means for regulating liquid flow rate placed on the pre-dilution line.

30. (Previously Presented) A device according to claim 1, further comprising a bag containing a first source of sterile liquid for post-dilution, and a first waste liquid container connected to the discharge line from the treatment unit being a bag for receiving waste liquid.

31. (Previously Presented) A device according to claim 30, further comprising a balance to weigh the bag of sterile liquid and the bag of waste liquid.

32. (Previously Presented) A device according to claim 31 wherein, said balance comprises a first independent balance to weigh the bag of sterile liquid and a second independent balance to weigh the bag of waste liquid.

33. (Previously Presented) A device according to claim 30, further comprising:

a post-dilution line connected, at one end, to the output line, and, at its other end, to a first source of sterile liquid;

means for regulating liquid flow rate placed on the post-dilution line;

a balance to weigh the bag of sterile liquid and the bag of waste liquid;

means for regulating liquid flow rate placed on the waste liquid discharge line connecting the second outlet of the treatment unit to a drain; and

a calculation and control unit to receive weight signals emitted by the balance and to control one or both of the means for regulating liquid flow rate placed on the

post-dilution line and the means for regulating liquid flow rate placed on the waste liquid discharge line.

34. (Previously Presented) A device according to claim 33, wherein said balance comprises a first independent balance to weigh the bag of sterile liquid and a second independent balance to weigh the bag of waste liquid, said calculation and control unit receiving first and second weight signals emitted by the first and second balances and independently controlling the means for regulating liquid flow rate placed on the post-dilution line and the means for regulating liquid flow rate placed on the waste liquid discharge line as a function of said first and second weight signals.

35. (Currently Amended) A method for the extracorporeal treatment of blood to be implemented on a device for the extracorporeal treatment of blood comprising:

an exchanger comprising a semi-permeable membrane dividing said exchanger into a first chamber and a second chamber, at least one first inlet for blood to be treated in fluid communication with the first chamber of the exchanger, a first fluid outlet in fluid communication with the first chamber of the exchanger and a second fluid outlet in fluid communication with the second chamber of the exchanger;

a blood input line for blood to be treated connected to the first inlet of the exchanger;

a blood output line connected to the first outlet of the exchanger;

and

a treatment unit comprising a semi-permeable membrane dividing said treatment unit into a first chamber to which at least one first fluid outlet is connected, and comprising a second chamber to which at least one first fluid inlet and a second fluid outlet are connected;

the method comprising the following steps:

sending blood through the input line connected to the exchanger;

filtering blood first in the exchanger, producing a first filtrate;

filtering the first filtrate at least a second time in the treatment unit, producing a second filtrate;

sending the second filtrate through the input line to effect a pre-dilution of the blood to be treated;

sending the blood out from the exchanger to the output line; and

sending a non-filtered liquid from the second chamber of the treatment unit to a waste drain line, without returning any fluid passing through said waste liquid discharge line to any other inlet or outlet of said treatment unit, said waste drain line being connected to the second fluid outlet of the treatment unit.

36. (Previously Presented) A method according to claim 35, wherein the second filtration step filters through the membrane of the treatment unit molecules of molecular weight less than the molecular weight of the molecules filtered by the membrane of the exchanger during the first filtration step.

37. (New) A device for the extracorporeal treatment of blood comprising:

at least one exchanger comprising a semi-permeable membrane dividing said exchanger into a first chamber and a second chamber, at least one first inlet for blood to be treated being in fluid communication with the first chamber of the exchanger, a first fluid outlet being in fluid communication with the first chamber of the exchanger and a second fluid outlet being in fluid communication with the second chamber of the exchanger;

an input line for blood to be treated connected to the first inlet of the exchanger;

a blood output line connected to the first outlet of the exchanger;

at least one treatment unit comprising a semi-permeable membrane dividing the treatment unit into a first chamber and a second chamber, the treatment unit having at least one first fluid inlet in fluid communication with the second chamber of the treatment unit and at least one first fluid outlet in fluid communication with the first chamber of the treatment unit;

a first tube having only a first end and a second end, the first end of said first tube being connected only with the second outlet of the exchanger, and the second end of said first tube being connected only with the first inlet of the treatment unit; and

the first outlet of the treatment unit being in fluid communication with the input line;

wherein:

the treatment unit includes a second fluid outlet in fluid communication with the second chamber of the treatment unit; and

the second outlet of the treatment unit is in fluid communication with a first waste liquid discharge line.

38. (New) A method for the extracorporeal treatment of blood to be implemented on a device for the extracorporeal treatment of blood comprising:

an exchanger comprising a semi-permeable membrane dividing said exchanger into a first chamber and a second chamber, at least one first inlet for blood to be treated in fluid communication with the first chamber of the exchanger, a first fluid outlet in fluid communication with the first chamber of the exchanger and a second fluid outlet in fluid communication with the second chamber of the exchanger;

a blood input line for blood to be treated connected to the first inlet of the exchanger;

a blood output line connected to the first outlet of the exchanger;
and

a treatment unit comprising a semi-permeable membrane dividing said treatment unit into a first chamber to which at least one first fluid outlet is connected, and comprising a second chamber to which at least one first fluid inlet and a second fluid outlet are connected;

the method comprising the following steps:

sending blood through the input line connected to the exchanger;

filtering blood first in the exchanger, producing a first filtrate;

filtering all of the first filtrate coming from the second fluid outlet of the exchanger at least a second time by introducing all of said first filtrate in the first inlet of the treatment unit;

sending the first filtrate, after said first filtrate has been filtered a second time, through the input line to effect a pre-dilution of the blood to be treated;

sending the blood out from the exchanger to the output line; and

sending a non-filtered liquid from the second chamber of the treatment unit to a waste drain line, said waste drain line being connected to the second fluid outlet of the treatment unit.